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Propagation of radiation in a plasma situated in a gravitational field - I. Construction of a general-relativistic electrical conductivity tensor operator

Zakharov A., Ignat'ev Y.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Weak electromagnetic and gravitational fields in a plasma situated in a strong gravitational field, are studied using linearized, general-relativistic, kinetic equations. A tensor operator is constructed for the electrical conductivity of a plasma in a gravitational field, which is a general-relativistic generalization of the electrical conductivity of a homogeneous plasma. Similar tensor operators, which allow one to determine the energy-momentum tensor and the vector current, induced by electromagnetic and gravitational fields in a plasma, are also obtained. © 1977 Plenum Publishing Corporation.

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